

REMARKS

Claims 1-14 remain pending in the application. Claims 1, 2 and 4-6 are amended, and claims 15-19 are cancelled. Reconsideration of the rejection and allowance of the pending application in view of the following remarks are respectfully requested.

In the Office Action, the Examiner objected to the drawings, asserting that Figs. 9-11 should be designated by a legend such as -- Prior Art --. Applicants have amended these figures to include a -- Prior Art -- legend, and thus, request that the Examiner withdraw the objection.

In the Office Action, the Examiner rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Zhou et al. (U.S. Patent No. 5,985,043).

Applicants' claim 1, as currently amended, recites an electronic component mounting method in which joints between a circuit substrate and electronic components are reinforced using a resin. The method includes supplying an unhardened reinforcing resin on the circuit substrate, supplying a solder paste on the reinforcing resin such that the reinforcing resin is disposed between the solder paste and bond areas of the circuit substrate, placing the electronic components on the circuit substrate, and heating the reinforcing resin. The solder paste flows through the reinforcing resin and contacts the bond areas of the circuit substrate to interconnect the circuit substrate and the electronic components in response to heating of the reinforcing resin.

Zhou et al. discloses a method of attaching a substrate to a device. In this method, a flux composition 120 is coated on a surface of a substrate 100, solder bumps or solder paste 140 are provided on a flip chip 130, and a metallization pattern 110 is provided on the substrate 100. See, e.g., Fig. 1 and col. 10., lines 3-9 of Zhou et al. The chip 130/230 is moved into contact with the metallization pattern 110/210, and an assembly 270 of these elements is reflowed in an oven. See, e.g., Fig. 2 and col. 10, lines 10-23 of Zhou et al.

Applicants respectfully submit that the flux composition 120 is not disposed between the solder 140 and the circuit substrate 100 when the chip is moved into contact with the substrate 100, and the solder 140 does not flow through the flux composition 120 in response to heating the flux composition 120. Rather, the solder 140/240 directly contacts the metallization pattern 110/210 when the chip 130/230 is moved into contact with the substrate 100/200. See Fig. 2 of Zhou et al.

Thus, Applicants respectfully submit that Zhou et al. does not disclose an electronic component mounting method which includes supplying an unhardened reinforcing resin on a circuit substrate, supplying a solder paste on the reinforcing resin such that the reinforcing resin is disposed between the solder paste and bond areas of the circuit substrate, placing the electronic components on the circuit substrate, and heating the reinforcing resin, where the solder paste flows through the reinforcing resin and contacts the bond areas of the circuit substrate to interconnect the circuit substrate and the electronic components in response to heating of the reinforcing resin, as recited in Applicants' amended claim 1.

For at least these reasons, Applicants submit that Zhou et al. does not anticipate the invention recited in Applicants' claim 1, and requests that the Examiner withdraw the rejection under 35 U.S.C. §102(b).

In the Office Action, the Examiner rejected claims 2-5 under 35 U.S.C. §103(a) as being unpatentable over Zhou et al. in view of Nakamura et al. (U.S. Patent No. 6,365,499).

Applicants respectfully submit that Nakamura et al. does not overcome the above-noted deficiencies of Zhou et al. with respect to claim 1. Nakamura et al. discloses a method for manufacturing a chip carrier, in which a resin 43 is formed on a board 40, and solder bumps 45 are formed in etched holes 44. See, e.g., Figs. 5A-5D and col. 10, lines 1-7 of Nakamura et al.

Applicants submit that Nakamura's solder 45 is not supplied on the resin 43, such that the resin 43 is disposed between the solder 45 and the board 40, and the solder 45 does not flow through the resin 43 and contact the board 40.

Thus, Applicants submit that the combined teachings of Zhou et al. and Nakamura et al. fail to disclose or suggest the inventions recited in independent claim 1, or claims 2-5, which depend therefrom. Further, Applicants respectfully submit that none of the methods disclosed by Zhou et al. nor Nakamura et al. include supplying a solder paste on a sheet-form resin, as recited in Applicants' claim 2. In the Office Action, the Examiner asserts that Nakamura's resin 43 is a sheet-form resin. Applicants respectfully disagree, and submit that Nakamura's resin 43 is a paste, not a sheet. See, e.g., col. 10, lines 16-19 of Nakamura et al. Accordingly, Applicants request that the Examiner withdraw the rejections of claims 2-5 under 35 U.S.C. §103(a).

In the Office Action, the Examiner rejected claims 6-14 under 35 U.S.C. §103(a) as being obvious over Zhou et al. (U.S. Patent No. 5,985,043) in view of Hayama et al. (U.S. Patent No. 6,051,448).

Applicants' claim 6, as currently amended recites an electronic component mounting method in which joints between a circuit substrate and electronic components are reinforced using a resin. The method includes, inter alia, printing a solder paste on bond areas of the circuit substrate, then restricting fluidity of the solder paste, then applying a thermosettable reinforcing resin on the circuit substrate, then placing the electronic components on the circuit substrate, and then solder-bonding the electronic components on the circuit substrate and hardening the reinforcing resin.

In the Office Action, the Examiner asserts that Zhou's flux composition 120/220 restricts fluidity of the solder 140/240. In contrast, Applicants' claim 6 recites that the fluidity of the

solder paste is restricted, and then the reinforcing resin is applied.

Further, Applicants' claim 6 requires that the electronic components being placed on the circuit substrate after the solder paste is printed and the fluidity of the solder paste is restricted.

In contrast, Zhou's solder 140/240 is not applied to the substrate 100/200 until the flip chip 130/230 is placed on the substrate 100/200. See Figs. 1-3 of Zhou et al.

Applicants submit that Hayama et al. does not overcome the above-noted deficiencies of Zhou et al., and thus, submit that the combined teachings of Zhou et al. and Hayama et al. fail to disclose or suggest an electronic component mounting method which includes printing a solder paste on bond areas of a circuit substrate, then restricting fluidity of the solder paste, then applying a thermosettable reinforcing resin on the circuit substrate, then placing electronic components on the circuit substrate, and then solder-bonding the electronic components on the circuit substrate and hardening the reinforcing resin, as recited in Applicants' claim 6.

For at least these reasons, Applicants submit that the inventions recited in Applicants' independent claim 6 and dependent claims 7-14 are not obvious in view of Zhou et al. and Hayama et al., and request that the Examiner withdraw the rejection under 35 U.S.C. §103(a).

Based on the above, it is respectfully submitted that this application is in condition for allowance, and a Notice of Allowance is respectfully requested.

SUMMARY AND CONCLUSION

Reconsideration of the outstanding Office Action, and allowance of the present application and all of the claims therein are respectfully requested and believed to be appropriate. Applicants have made a sincere effort to place the present invention in condition for allowance and believe that they have done so.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should an extension of time be necessary to maintain the pendency of this application, including any extensions of time required to place the application in condition for allowance by an Examiner's Amendment, the Commissioner is hereby authorized to charge any additional fee to Deposit Account No. 19-0089.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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February 23, 2009
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